Abstracts

TOM3 capacitance model: linking large- and small-signal MESFET models in SPICE

R.B. Hallgren and P.H. Litzenberg. "TOM3 capacitance model: linking large- and small-signal MESFET models in SPICE." 1999 Transactions on Microwave Theory and Techniques 47.5 (May 1999 [T-MTT]): 556-561.

Improved accuracy in the modeled gate capacitance of GaAs metal-semiconductor field-effect transistors (MESFET's) is obtained in SPICE using conservation of charge in an implanted layer. The gate junction creates a natural partition between mobile and fixed channel charges. Relating the gate charge to the channel current creates gate capacitances dependent upon the channel current derivatives linking the small-signal model to the large-signal equations. Results are illustrated using a depletion-mode MESFET.

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